

NATIONAL SAFETY COUNCIL
COMMITTEE ON ALCOHOL AND OTHER DRUGS

ALCOHOL TECHNOLOGY, PHARMACOLOGY, AND TOXICOLOGY
SUBCOMMITTEE REPORT

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This subcommittee has completed its assessment of the scientific literature and other relevant publications concerning the scientific soundness of time-of-test laws and has produced a report of our findings.

Historically, laws concerning impaired¹ driving (DUI) required the prosecution to prove the defendant was impaired while driving or operating a vehicle. These kinds of laws are called time-of-driving laws. Under laws of this kind, the prosecution presented testimony from the arresting officer and other witnesses about the defendant's driving performance, demeanor, odor of an alcoholic beverage, ability to perform physical agility tests, horizontal gaze nystagmus, etc. at the time of the alleged offense. Chemical test evidence from blood, breath, or urine, taken after the alleged offense, was then presented to corroborate the testimony of the witnesses.

Typically, these early laws established a prima facie blood alcohol concentration at which a person was legally presumed to be impaired. Presumptive evidence can be rebutted in court and the chemical test itself may be disputed. Therefore, many jurisdictions adopted per se laws that define the offense as driving with an alcohol concentration at or above a specified level (such as 0.08 or 0.10). With the change to per se laws, the primary focus of DUI prosecution narrowed to the defendant's alcohol concentration at the time of the offense.

The time course of alcohol in the human body is a dynamic process. Retrograde extrapolation has been used to link the alcohol concentration at the time of the test back to the time of the offense. Retrograde extrapolation is a scientific calculation of a subject's alcohol concentration at a prior time, usually the time of the offense, derived from a blood, breath, or urine alcohol concentration measured at a later time. To be forensically useful and scientifically valid, such extrapolations may require facts

¹In this report the terms intoxicated by and under the influence of alcohol may be substituted for impaired.

concerning the person, that person's alcohol consumption, and related information, that are often not available in such situations.

Recognizing this, many jurisdictions, including at least 32 States and the District of Columbia in the United States and all of Canada (Table 1), have adopted laws that define the alcohol element of the offense as the alcohol concentration of the blood, breath, urine, or other bodily specimen at the time of the test. Most of these jurisdictions require the specimen be taken within a specified time after the offense or arrest, if the evidence is to be admitted without retrograde extrapolation or further proof. The Uniform Vehicle Code model DUI law is a time-of-test law².

The purpose of this report is to document whether time-of-test laws are scientifically sound and supported by the scientific literature. The subcommittee extensively reviewed the scientific literature and other relevant publications that deal with the pharmacokinetics of alcohol and retrograde extrapolation. The great majority of the publications reviewed, that either directly or indirectly address time-of-test laws, provide support for these laws.

It is the opinion of this subcommittee that time-of-test laws are scientifically sound and supported by the scientific literature.

Acknowledgement

TABLE 1, Time of Test Laws by State and Canada was prepared by Texas Department of Public Safety Assistant General Counsel Janette Ansolabehere.

²National Committee on Uniform Traffic Laws and Ordinances (2000), Millenium DUI Prevention Act. <http://www.ncutlo.org/modellaws.htm>.

TABLE 1: TIME OF TEST LAWS BY STATE AND CANADA
(Includes the Virgin Islands and Guam)

Jurisdictions with Time of Test Laws			Jurisdictions with No Time of Test Law ⁴
Per Se Time limit ¹	Presumption No time limit ²	Presumption Time limit ³	
Arizona (2 hours) ⁵ Colorado(2 hours) ⁶ Delaware (4 hours) ⁷ Georgia (3 hours) ⁸ Kansas (2 hours) ⁹ Kentucky (2 hours) ¹⁰ Maryland (2 & 4 hours) ¹¹ Minnesota (2 hours) ¹² Nevada (2 hours) ¹³ North Dakota (2 hours) ¹⁴ Oklahoma (2 hours) ¹⁵ Pennsylvania (2 hours) ¹⁶ South Carolina (2 hours) ¹⁷ Washington (2 hours) ¹⁸ Wisconsin (3 hours) ¹⁹	Alabama Colorado ²⁰ District of Columbia ²¹ Florida Guam ²² Illinois ²³ Louisiana ²⁴ Michigan (DUI) Missouri ²⁵ New Hampshire ²⁶ South Dakota Tennessee Virgin Islands ²⁷ West Virginia ²⁸	Alaska (4 hours) Arizona (2 hours) California (3 hours) Canada (2 hours) ²⁹ Connecticut (2 hours) ³⁰ Indiana (3 hours) ³¹ Iowa (2 hours) ³² Montana (“reasonable time”) New York (2 hours) ³³ North Carolina ³⁴ Virginia (3 hours)	Arkansas ³⁵ Delaware ³⁶ Idaho ³⁷ Hawaii ³⁸ Maine Massachusetts ³⁹ Michigan ⁴⁰ Mississippi ⁴¹ Nebraska New Jersey ⁴² New Mexico ⁴³ Ohio ⁴⁴ Oregon Rhode Island ⁴⁵ Texas ⁴⁶ Utah ⁴⁷ Vermont ⁴⁸ Wyoming (3 hours) ⁴⁹

¹ Although the language in the laws of the states in this category appear to provide that the person commits the offense if he has a BAC of 0.08 or 0.10, whichever applies, within a certain time after driving or operating the vehicle, in many of these states the appellate courts treat the offense language as establishing prima facie evidence of a BAC which can be rebutted by the defendant. Some like Arizona and Delaware have such specific language in their statutes that it clearly establishes that the person commits an offense if he has a BAC at or above the limit within the required time for testing unless there is evidence that the person consumed alcohol after driving.

² Most states with presumptions break it down in the following manner: 0.05 or less—presumed not intoxicated/impaired; more than 0.05 but less than 0.08 (or 0.10 if applicable)—no presumption; 0.08 (or 0.10)—presumed intoxicated/impaired. However, there are variations as noted. In addition, some states provide “permissible inferences” which do not shift the burden of production and persuasion to the defendant, while others provide that a particular test result is “prima facie evidence” which is similar to a presumption in that it shifts the burden to the defendant to put forth evidence negating the presumption.

³ Most states that have a time of test limit do not make it “drop dead.” Rather, the prosecution loses the benefit of the presumption of intoxication if the test is performed outside the specified time.

⁴ Some of the states such as Alabama and Hawaii have presumptions applicable to levels between 0.00—0.05 and 0.05—0.08. These are noted in the footnotes for that state.

⁵ Arizona has a separate offense for operating a motor vehicle if the person has a BAC of 0.15 or higher within two hours of driving or being in actual physical control and the alcohol concentration is the result of alcohol consumed either before or while driving or being in actual physical control. The presumption applies only to offenses under 28-1381 (0.08).

⁶ Colorado has a separate offense for operating a vehicle while having a BAC of 0.10 or higher as shown by a test taken within two hours of the offense; it is an affirmative defense if defendant proves by

preponderance of the evidence that he consumed alcohol between time of driving and time of test—the state must then prove that 0.10 was reached before defendant stopped driving.

⁷ This is for an offense under 21 Del. C. § 4177(5) which provides that if the person's BAC is 0.10 or higher as shown by a test taken with four hours of driving, the person is "guilty...without regard to the person's alcohol concentration at the time of driving" if the alcohol was consumed before or during driving.

⁸ Georgia has six different DUI offenses. One makes it an offense to have a BAC of 0.08 or higher within three hours of driving or being in actual physical control from alcohol consumed before driving or while driving. Provides a presumption of intoxication if 0.08 or higher within three hours of driving for offenses involving operation of a watercraft or hunting, but not for Driving under the Influence (O.C.G.A. § 40-6-391).

⁹ Kansas has different DUI offenses depending on proof.

¹⁰ Kentucky also has five different offenses. One makes it an offense to operate a vehicle with an alcohol concentration of 0.08 or higher as measured by a scientifically reliable test or tests of breath or blood taken within two hours of time driving ceased. If taken after two hours, results are not admissible for offense under the 0.08 and 0.02 (minors) offenses, but are admissible in prosecutions under other offenses (the "under influence" or "combined influence" offenses). Provides presumptions for charges of DUI and DUCI (less than 0.05—not under the influence; 0.05 but less than 0.08—no presumption either way). Also provides that a BAC of 0.18 or higher within two hours of driving or refusing the test are aggravating circumstances.

¹¹ Maryland has a time of test requirement of two hours for alcohol tests, and four hours for drug tests. There are three presumptions: less than 0.05—no influence; 0.05-0.07—no presumption either way; 0.07-0.08—presumed under the influence. If at or over 0.08 within two hours, the person "shall be considered under the influence of alcohol per se as defined in § 11-127.1." Legislature included a statement of intent that it was more concerned with protecting the public than protecting the accused.

¹² Minnesota has seven "prongs," two of which are per se (0.10 or higher and 0.04 or higher in CMV). A BAC of 0.20 or higher as shown by a test within 2 hours is an aggravating factor. Breath test can be admitted with proving reliability of methodology.

¹³ Nevada has three separate ways of being DUI (under influence, concentration of 0.08 or higher, or having a test within two hours of driving that has a measurement of 0.08 or higher). The statute has a sunset provision that provides that the 0.08 provisions expire when the federal law mandating a 0.08 standard expires. Defendant must notify state attorney at least 14 days in advance of trial or hearing of intent to introduce evidence of alcohol consumption after driving and before testing.

¹⁴ Also provides that it is an offense if a minor (under 21) operates a motor vehicle on a road (public or private) and has a BAC of 0.02 at the time of a test taken within two hours of driving.

¹⁵ The language of 47 Okl. St. § 11-902(A)(1) states that it is unlawful if a subject drivers, operates, or is in actual physical control of a motor vehicle and has a BAC of 0.08 or greater at the time of a test administered within two hours of the arrest. This implies that Oklahoma should go in the first column; however, Section 756 provides that a BAC of 0.08 or greater shall be admitted as prima facie evidence that the person was under the influence of alcohol. Oklahoma courts have applied this to cases under 11-902(A)(1), and have indicated that the subject can offer rebuttal evidence.

¹⁶ Effective February 1, 2004, the former DIW statute, 75 Pa. C.S. § 3731, was repealed and 75 Pa. C.S. ch. 38 is effective. Section 3802 provides three separate per se violations: at least 0.08 but less than 0.10, at least 0.10 but less than 0.16, and 0.16 or higher. All tests must be taken within two hours of driving. If the test is taken outside the two hour limit, the statute provides a manner in which the state can still use the test results to establish the element of the offense. In 1996 section 3731 was found unconstitutional by the Pennsylvania Supreme Court because it permitted a person to be found guilty of DUI because the person

has a BAC of 0.10 shown by a test taken within three hours which, according to the court, permitted a person to be less than a 0.10 at the time of driving and still be found guilty of the offense. It is possible the court will apply the same rationale to the new section.

¹⁷ South Carolina has two separate offenses: Driving While under the Influence and Driving with an Unlawful Alcohol Concentration. To be prosecuted under the latter, the test must have been administered within two hours of the time of arrest. A subject cannot be charged with both. If the test was given more than two hours after the arrest, the person may be charged with DUI and the test result may be admitted, giving rise to an inference the person was under the influence of alcohol.

¹⁸ A test taken more than two hours after the alleged driving may be introduced as evidence in a trial charged under the 0.08 prong which provides that it is an offense if the person drives a vehicle and has, within two hours after driving, a BAC of 0.08 or higher. The test result can also be used to show the driver was driving under the influence under the other prongs.

¹⁹ If taken more than three hours from driving, the law requires expert testimony that the test results are probative of person's condition at time of driving in order for the test results to be admissible and be given prima facie effect. A result of 0.08 or higher is considered prima facie evidence that the person was under the influence of alcohol and had a BAC of 0.08 or higher. The subsection contains language indicating the presumption only applies to persons with two or few prior convictions or ALR suspensions; however, case law indicates that this language is superfluous because prior to recent amendment, the per se BAC was 0.10 for those with two or few prior convictions/suspensions, and 0.08 for those with three or more prior convictions/suspensions. The legislature failed to remove the language when it established 0.08 as the lower limit for establishing a prima facie BAC.

²⁰ For the offenses of Vehicular Assault and Vehicular Homicide, there is not specified time limit within which the presumption applies. Instead the statutes use the language, "within a reasonable time thereafter...." A presumption of intoxication for a BAC of 0.10 or higher when the test is taken within a reasonable time after the offense also applies to DUI and DWAI offenses under 42-4-1301(1)(a) or (b).

²¹ If the subject BAC is less than 0.14 micrograms per 1 milliliter of breath, there is no presumption; if the BAC is 0.24 micrograms or more in 1 milliliter of breath, the evidence constitutes prima facie proof that subject was DUI. Converted to the measurements used in most states (grams per 210 liters), the presumption of intoxication kicks in at approximately 0.05).

²² No presumption if BAC is less than 0.08. Presumption of intoxication if BAC is 0.08 or higher if evidence is introduced that the instrument was operating correctly and test was taken properly under applicable rules. (Three hour time of test provision applicable for offenses involving watercraft or vessels).

²³ Former presumption of "under the influence of alcohol" if 0.08 or higher applicable to Involuntary Manslaughter and Reckless Homicide (720 ICLS § 5/9-3) was repealed in 2003.

²⁴ As of September 1, 2003, Louisiana has adopted the 0.08 standard for intoxication.

²⁵ Missouri also provides that a person charged with DWI or DUI has BAC less than 0.08, the charge must be dismissed with prejudice unless one of three prongs are met (unreliable test, presence of drugs, or other substantial evidence of intoxication from witness observations of subject's physical condition or admissions by the subject).

²⁶ New Hampshire has an offense of Aggravated DWI which includes driving a vehicle with a BAC of 0.16 or higher.

²⁷ The Virgin Islands "per se prong" is 0.08. However, Section 493a provides that if the subject's BAC at the time of the test is 0.10 or higher, that fact is prima facie evidence that the person was under the influence of alcohol.

²⁸ Standard presumptions for DUI. BAC of 0.04 or higher is presumption of being under influence while *flying*.

²⁹ If the test is taken more than two hours after driving, the test result is admissible but the prosecution must put on expert witness evidence to relate the test result back to the time of driving.

³⁰ In Connecticut, test must be given within two hours of operation of vehicle, and a second test of same type must be given at least 30 minutes after initial test. Rebuttable presumption that test establishes the BAC at time of offense. However, if the results of the second test indicate that the ratio of alcohol in the blood is twelve-hundredths of one percent or less of alcohol, by weight, and is higher than the results of the first test, evidence must be presented that demonstrates that the test results and the analysis thereof accurately indicate the blood alcohol content at the time of the alleged offense.

³¹ Defense to operating a vehicle with certain controlled substances or their metabolites if subject consumed the drug under a valid prescription or order of a medical practitioner acting in the course of the practitioner's professional practice.

³² If the breath test is taken within two hours of driving, the test result is presumed to be the BAC at the time of driving.

³³ Only applies to the *per se* offense of having a BAC of 0.08 or higher which is one of six methods of offense.

³⁴ North Carolina's statute is vague—really more of a *per se* offense to have a BAC of 0.08 or higher as shown by a test "taken at any relevant time after driving." Test must be given within 30 minutes of administering the statutory warnings although the subject has the right to call an attorney and select a witness to view the testing procedures.

³⁵ Arkansas has a presumption that a subject is not under the influence of liquor for BAC levels below 0.04 if the test is taken within four hours, but no presumption if the BAC of 0.08 or higher. For offenses involving aircraft or watercraft, the time of test limit is two hours.

³⁶ Except for the offense noted in the first column, there is no presumption or time of test requirement for an offense under 21 Del. C. § 4177(4).

³⁷ Idaho has a statute that states that if a person takes a chemical test at an officer's request and the result is less than 0.08, the person will not be prosecuted for DUI the 0.08 offense, unless the person was operating a CMV with a BAC of 0.04 or higher, but less than 0.08, or the person is under 21 and he has a BAC of 0.02 or more, but less than 0.08. However, the person may be prosecuted under the impaired by alcohol and drugs prong, and the test results may be introduced and considered by the trier of fact. Also has a provision that if the test is performed by a lab operated or approved by the Idaho state police or a method approved by the state police, the records relating to analytical results, calibration, approval, and quality control are admissible in trial without the necessity of establishing the reliability of the testing procedure by means of a witness.

³⁸ Hawaii has a presumption that a person is not under the influence if the BAC is 0.05 or less & test is taken within three hours. There is no presumption of intoxication if the BAC is between 0.05 and 0.08. There is no specific presumption of intoxication for a BAC 0.08 or higher.

³⁹ Jury may *not* presume defendant refused because he was intoxicated; that it his legal right to refuse.

⁴⁰ In 2013 the *per se* prong of "operating while intoxicated" will go from 0.08 to 0.10.

⁴¹ There is a three hour test limit for operating a watercraft under the influence (person does not have to be under arrest before test is given.) In a fatality accident, a mandatory test for alcohol and/or drugs is required which must be taken within two hours if possible.

⁴² Uses 0.10 standard. No time of test limit for purposes of DWI prosecution, but for purposes of tracking DWI accident and fatality statistics, provides that a blood test be taken within four hours from the bodies of deceased drivers or pedestrians where drugs and/or alcohol is considered to be a factor.

⁴³ Has a presumption of DUI if a person has a BAC of 0.04 and the person was driving a commercial motor vehicle; no corresponding presumption for operators of non-commercial motor vehicles for a BAC of 0.08 or more. Does have a blanket presumption that a person was not DUI if the BAC is less than 0.04.

⁴⁴ The statute's wording requires the jury to find that the subject's BAC was equal to or greater than a 0.08 at the time of driving. Has another prong which makes it an offense to operate a motor vehicle with a BAC equal to or greater than 0.17 for which the penalties are greater.

⁴⁵ Three hour time of test limit for Operating a Watercraft under the Influence.

⁴⁶ Requires the jury to find that the subject's BAC was 0.08 or higher at the time of operating the vehicle.

⁴⁷ The Utah Legislature repealed the former two hour time of test provision.

⁴⁸ Vermont has no time of test limit applicable to *criminal cases*. However, in a civil DL suspension case, if the test is taken within two hours of driving, it raises a rebuttable presumption that driver was driving under the influence. Vermont law also provides a *permissible inference* in prosecutions brought under prongs for DUI (not the BAC charge) or DUI alcohol and/or drugs if the subject's test results were 0.080 or higher.

⁴⁹ Time applies to trigger presumptions for 0.05 or less and 0.05 to 0.10. Tests are to be given as soon as possible after arrest. Results are still admissible if taken later, but trier of fact may give them less weight or no weight at all.

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